

REMARKS/ARGUMENTS

This is a response to an Office Action mail May 6, 2003.

Claim 13 has been objected to concerning the need to change "said transfer robot" to "said transport robot".

Substantively, claims 1-2 and 5 stand rejected on grounds of anticipation by Akimoto (5,942,013); claims 3 and 4 for obviousness over Akimoto; claims 6-8 for obviousness over Akimoto, further in view of Pike (6,240,874); claims 9-12 and 15-16 for obviousness over Akimoto, further in view of Ogata (6,313,903); claim 13 for obviousness over Akimoto and Ogata, further in view of Sato, et al. (5,766,360); and claim 14 for obviousness over Akimoto and Sato, et al., further in view of Kimura (6,439,822).

Reconsideration of the aforementioned objection and rejection is requested in view of the replacement of the claims by the presently introduced claims 17-28 and the following remarks.

To facilitate the further examination of the instant application, please note initially that claims 18, 22 and 26 correspond to the canceled claim 13 and the ground of objection noted by the Examiner therein has been dealt with and should therefore be withdrawn.

Further, independent claim 17 corresponds to the former claims 9, 10 and 11, with its dependent claims 18, 19 and 20 corresponding respectively to claims 13, 15 and 16.

Independent claim 21 corresponds to the former claims 9, 10 and 12, and its dependent claims 22, 23 and 24 correspond, respectively, to claim 13, 15 and 16.

Independent claim 25 comprises the limitations of former claims 9, 10 and 14, and its dependent claims 26, 27 and 28 correspond, respectively, to prior claims 13, 15 and 16

In the present invention, an inspection section is provided in an upside structure of an indexer portion, and a transport robot for transporting a substrate to/from a carrier is arranged in a downside structure of the indexer portion. In plan view, the location of the upside structure is included in an area defined by the downside structure. Since a plane area taken up by the inspection section is included in the area defined by the downside structure, an additional plane area required for the inspection section can be eliminated. This results in a footprint decrease of the whole apparatus, allowing a substrate to be processed and inspected at low cost.

The present invention includes three aspects.

According to a first aspect defined by claims 17 to 20, an upside structure having an inspection section is provided in a location out of a path (hereinafter referred to as "robot path") in which a transport robot moves between a processing portion and a carrier.

In a case where the inspection section is located in a position that interferes with the robot path, the transport robot needs to transport a substrate between the processing portion and the carrier while bypassing the inspection section. In such a case, the footprint can be decreased while throughput gets deteriorated. The present invention enables the transport robot to transport a substrate at high speed between the processing portion and the carrier, and thus does not cause a decrease in transport efficiency of the substrate due to the arrangement of the inspection section in the indexer portion.

According to a second aspect defined by claims 21 to 24, the downside structure includes a carrier stage on which a plurality of carriers are aligned. Each carrier contains a plurality of substrates over which an upside structure is provided.

Particles are inevitably generated when the transport robot, which has a mechanical movable unit, accesses the carrier. Contamination by particles is extremely undesirable for the inspection section that inspects a processed substrate. For example, contamination of a substrate to be inspected or an inspection device in the inspection section by particles not only spoils the substrate itself, but may cause the inspection device to malfunction, resulting in errors in the inspection result.

The present invention arranges an inspection section on a plurality of substrates, i.e., a carrier, so that “a drop of particles generated when the transport robot accesses the carrier onto the inspection section” can be prevented.

According to the third aspect defined by claims 25 to 28, a clean air outlet is provided under the inspection section to supply clean air to the downside structure. This aspect provides another method for preventing “particles generated when the transport robot accesses the carrier from reaching the inspection section” as discussed in the above second aspect. That is, by supplying clean air from the “clean air outlet” provided under the inspection section toward the downside structure, the particles generated by the transport robot in the downside structure flow below the downside structure and are prevented from “reaching the inspection section”.

The cited Akimoto fails to disclose an inspection section. It should be noted that an inspection section 4 in Ogata’s Fig. 1 relied upon by the Examiner is arranged outside as indexer portion, which can be further and clearly understood from Ogata’s Fig. 2. It should also be noted that the film thickness measuring portion focused on by the Examiner is located outside the indexer portion. Accordingly, the structure of the present invention in which “the inspection section is arranged by using the upper space of the indexer portion” is not disclosed or suggested by Ogata.

Sato discloses in Fig. 1 an inspection chamber and that "a plurality of inspection units may be provided in the inspection chamber 6". However, there is no disclosure in Sato about whether the inspection units are provided above, under, or at the same level as a handler 13 and a substrate 15. Accordingly, neither a "multi-stage structure between upside and downside structures", nor "inspection units provided in the upside structure" is disclosed or suggested by Sato.

Kimura discloses using an FFU to obtain a clean environment. However, Kimura provides in Fig. 13 the FFU on a top portion of the apparatus, and fails to disclose the characteristic structure of the present invention in which "a clean air outlet is provided under the inspection section." Kimura does not provide an appropriate method for preventing particles carried by clean air from entering the inspection section. If the inspection portion of Ogata is combined with the FFU of Kimura, the inspection section would be provided under the FFU, and as a result, the inspection section would prevent clean air from being supplied to a carrier.

With the foregoing in mind, and noting further that the cited Pike reference is not relevant to the newly introduced claims, all the more so, since it contains no disclosure of any type which suggests the structure of the present invention regarding the arrangement position of the inspection unit, clean air, or outlet, it is respectfully submitted that all of the claims presently pending in the instant application are clearly patentable over the prior art.

Accordingly, the Examiner is respectfully requested to reconsider the application, allow the newly presented claims and pass this case to issue.

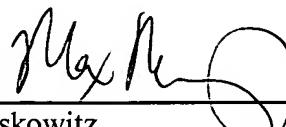
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Mail Stop Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on August 6, 2003:

Max Moskowitz
Name of applicant, assignee or
Registered Representative

Signature

August 6, 2003
Date of Signature

Respectfully submitted,



Max Moskowitz
Registration No.: 30,576
OSTROLENK, FABER, GERB & SOFFEN, LLP
1180 Avenue of the Americas
New York, New York 10036-8403
Telephone: (212) 382-0700